


FEMCard analysis result

20.10.15


Project data	
Projectname	isotropic_material_scattered_elastoplastic_3D
Folder	F:\tmp_del\Demo_Projects\A_isotropic_material\A_scattered_elastoplastic\3D
Created at	07.06.2015
Maker	Parsolve GmbH
Comment	Synthetic scattered measurement data for elastoplastic material
Material model	ISOTR 3D SMALL strain von MISES PLASTICITY (nonlinear isotropic hardening)

Test informations


Test 1

Color	
Number	1
Name	Pl_Mat_Uniax_Test_1
Folder	F:\A_synth_meas\A_isotropic_material\A_scattered_elastoplastic\3D\Pl_Mat_Uniax_Test_1.txt
Load type	Isotropic static SMALL strain UNIAXIAL axial stress vs. axial and transverse strains
Weight T	1.3493

Test 2


Color	
Number	2
Name	Pl_Mat_Uniax_Test_2
Folder	F:\A_synth_meas\A_isotropic_material\A_scattered_elastoplastic\3D\Pl_Mat_Uniax_Test_2.txt
Load type	Isotropic static SMALL strain UNIAXIAL axial stress vs. axial and transverse strains
Weight T	1.15686


Test 3

Color	
Number	3
Name	Pl_Mat_Uniax_Test_3
Folder	F:\A_synth_meas\A_isotropic_material\A_scattered_elastoplastic\3D\Pl_Mat_Uniax_Test_3.txt
Load type	Isotropic static SMALL strain UNIAXIAL axial stress vs. axial and transverse strains
Weight T	1.48984

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Test 4	
Color	
Number	4
Name	PI_Mat_Uniax_Test_4
Folder	F:\A_synth_meas\A_isotropic_material\A_scattered_elastoplastic\3D\PI_Mat_Uniax_Test_4.txt
Load type	Isotropic static SMALL strain UNIAXIAL axial stress vs. axial and transverse strains
Weight T	1

Test 5	
Color	
Number	5
Name	PI_Mat_Uniax_Test_5
Folder	F:\A_synth_meas\A_isotropic_material\A_scattered_elastoplastic\3D\PI_Mat_Uniax_Test_5.txt
Load type	Isotropic static SMALL strain UNIAXIAL axial stress vs. axial and transverse strains
Weight T	1.69775

Tests weight TR

Test 1		
Start	End	Value
0	53	32.5
54	106	11.5
107	160	5.86
161	213	3.2
214	267	1.63
268	320	1

Test 2		
Start	End	Value
0	53	30.4
54	106	11.2
107	160	5.82
161	213	3.09
214	267	1.57
268	320	1

Test 3		
Start	End	Value
0	53	32.4

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54	106	11.4
107	160	5.85
161	213	3.27
214	267	1.68
268	320	1

Test 4		
Start	End	Value
0	53	34.5
54	106	11.8
107	160	5.65
161	213	2.79
214	267	1.48
268	320	1

Test 5		
Start	End	Value
0	53	29.3
54	106	10.6
107	160	5.58
161	213	3.26
214	267	1.74
268	320	1

Tests weight SD

Test 1	
Strain direction	Value
ε_{exp}^{xx}	1
ε_{exp}^{yy}	2.1

Test 2	
Strain direction	Value
ε_{exp}^{xx}	1
ε_{exp}^{yy}	2.11

Test 3	
Strain direction	Value
ε_{exp}^{xx}	1
ε_{exp}^{yy}	2.1

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Test 4	
Strain direction	Value
$\varepsilon_{\text{exp}}^{\text{xx}}$	1
$\varepsilon_{\text{exp}}^{\text{yy}}$	2.08

Test 5	
Strain direction	Value
$\varepsilon_{\text{exp}}^{\text{xx}}$	1
$\varepsilon_{\text{exp}}^{\text{yy}}$	2.11

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Model parameter					
Parameter	Fix	Lower limit	Upper limit	Start value	Result
E		1000	300000	150000	78122.31
PR		0.1	0.4	0.3	0.3087748
Y_0		20	200	150	101.5978
Y_inf		30	300	300	181.0775
Omega		50	800	200	174.1078
H		10	10000	1800	1531.354

Processing parameter	
Max. number of steps	200
LM start value	0.1
Max. error sum of squares	1e-05

Processing results	
Steps	14
Least squares sum	0.136652

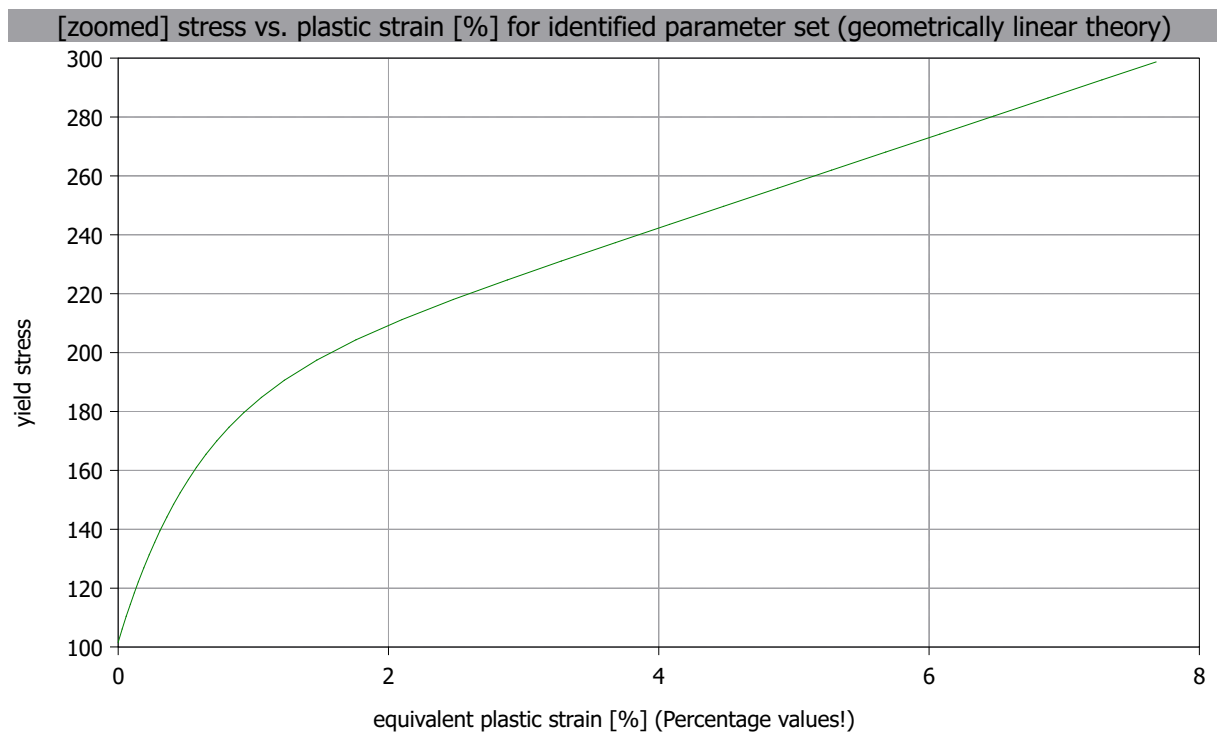
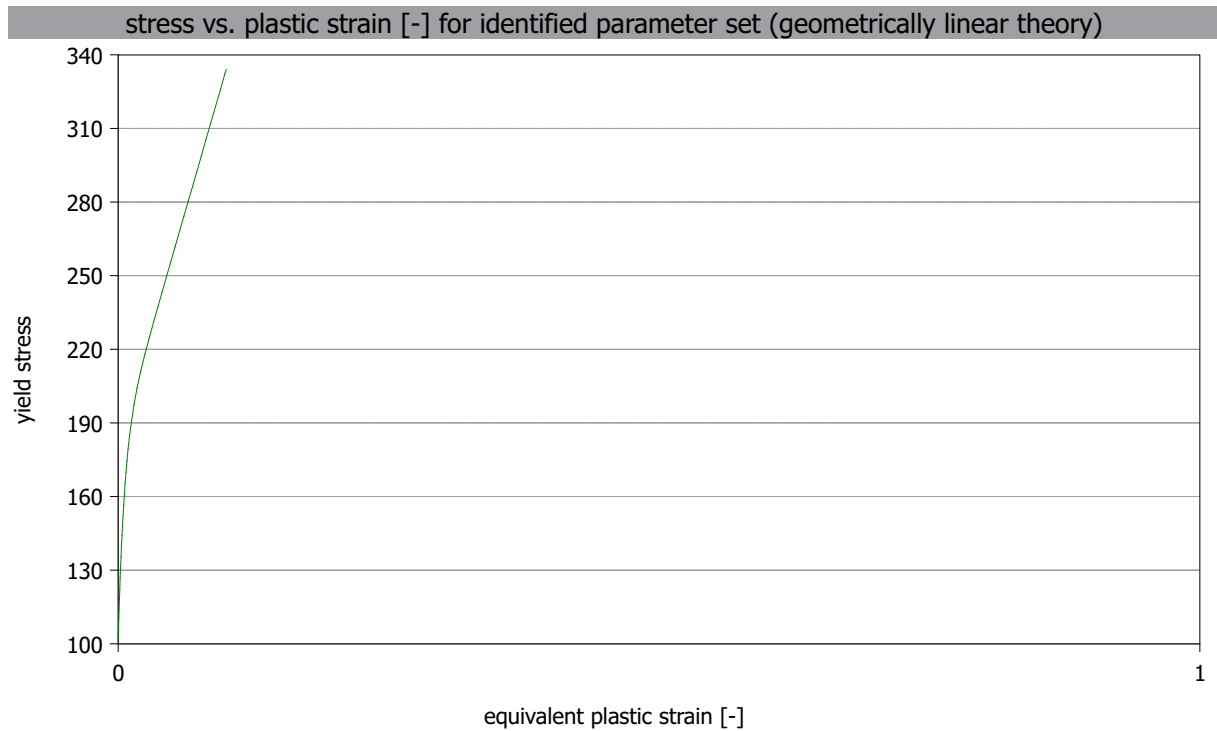
Correlation matrix						
	E	PR	Y_0	Y_inf	Omega	H
E	1	-0.887	-0.927	-0.631	-0.547	-0.445
PR	-0.887	1	0.865	0.589	0.51	0.415
Y_0	-0.927	0.865	1	0.703	0.294	0.3
Y_inf	-0.631	0.589	0.703	1	-0.173	-0.393
Omega	-0.547	0.51	0.294	-0.173	1	0.812
H	-0.445	0.415	0.3	-0.393	0.812	1

stress vs. plastic strain [-] for identified parameter set (geometrically linear theory)	
yield stress	equivalent plastic strain [-]
101.5978	0
106.1021	0.0003
110.4005	0.0006
114.5035	0.0009
118.4212	0.0012
122.1628	0.0015
126.8932	0.0019
131.3467	0.0023

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135.5417	0.0027
139.4958	0.0031
144.124	0.0036
148.4302	0.0041
152.4412	0.0046
156.8993	0.0052
161.0063	0.0058
165.4004	0.0065
169.958	0.0073
174.5703	0.0082
179.5776	0.0093
184.7569	0.0106
190.5763	0.0123
197.4405	0.0147
204.3187	0.0176
211.1831	0.021
217.9958	0.0248
224.6526	0.0288
231.0428	0.0328
237.3002	0.0368
243.4914	0.0408
249.6496	0.0448
255.7914	0.0488
261.9249	0.0528
268.0544	0.0568
274.1818	0.0608
280.3083	0.0648
286.4342	0.0688
292.5598	0.0728
298.6854	0.0768
305.4234	0.0812
312.1614	0.0856
318.8994	0.09
325.6373	0.0944
332.3753	0.0988
334.0598	0.0999

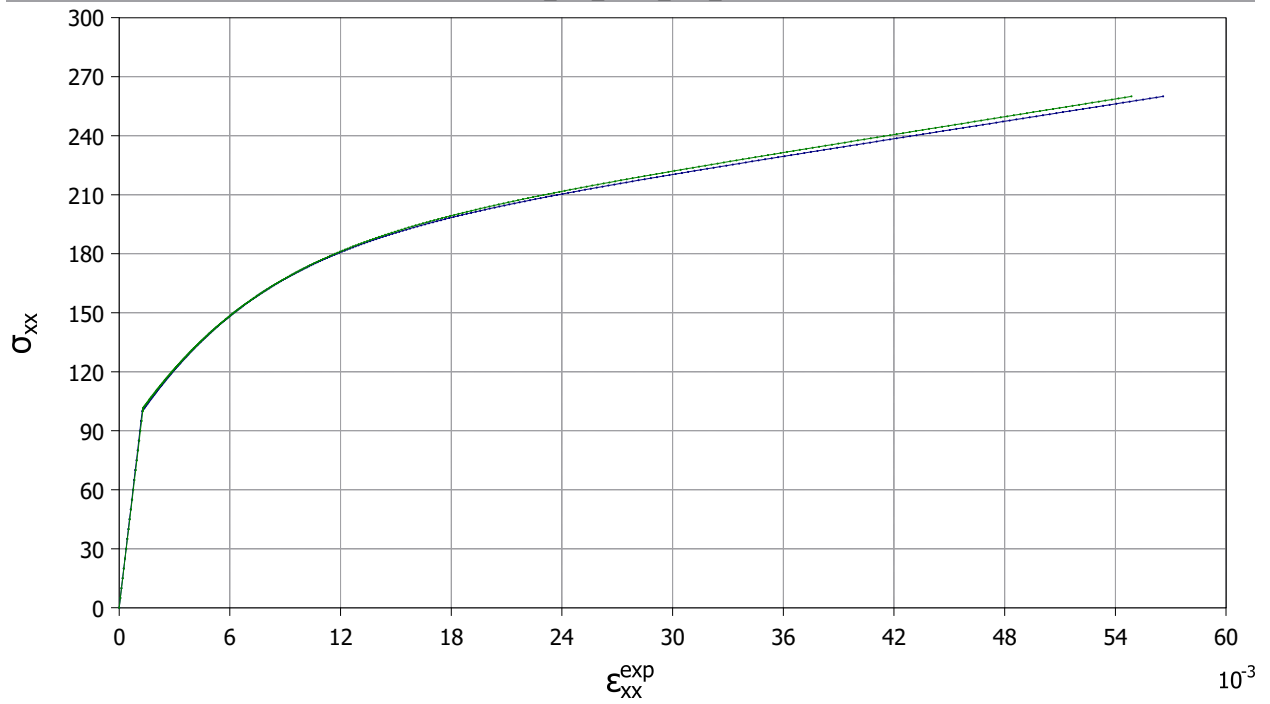


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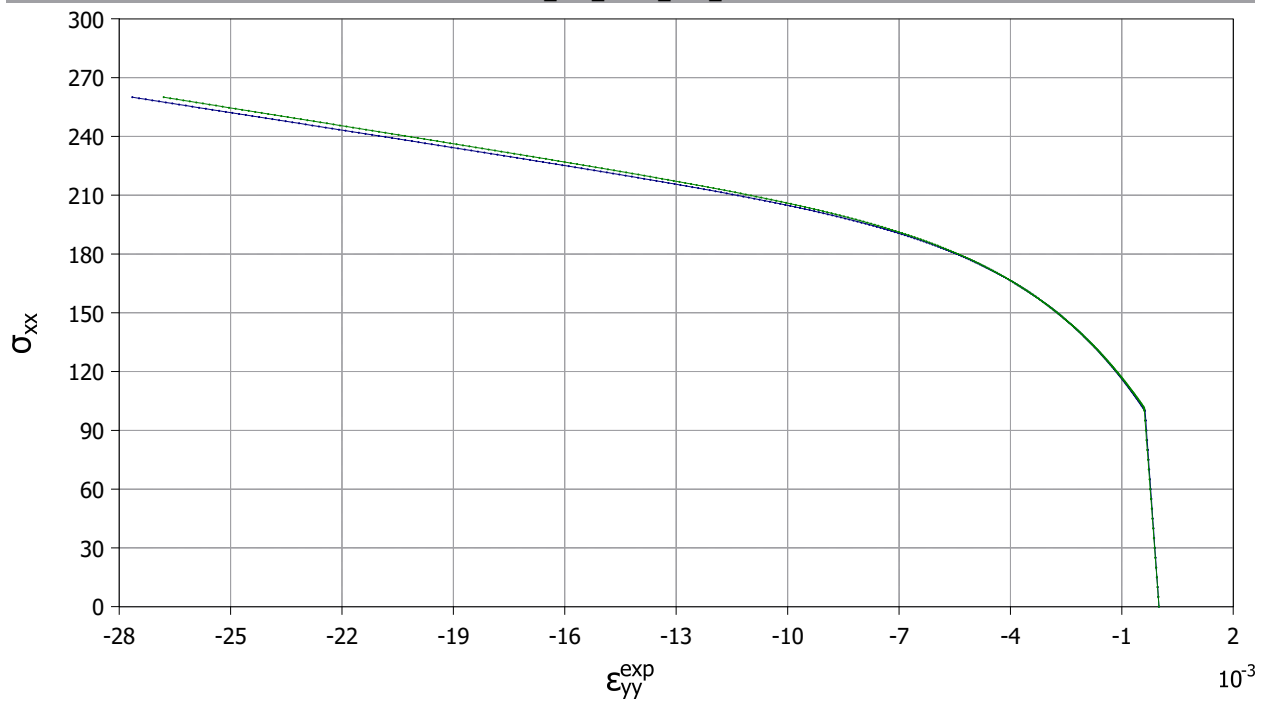
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Verification

PI_Mat_Uniax_Test_1

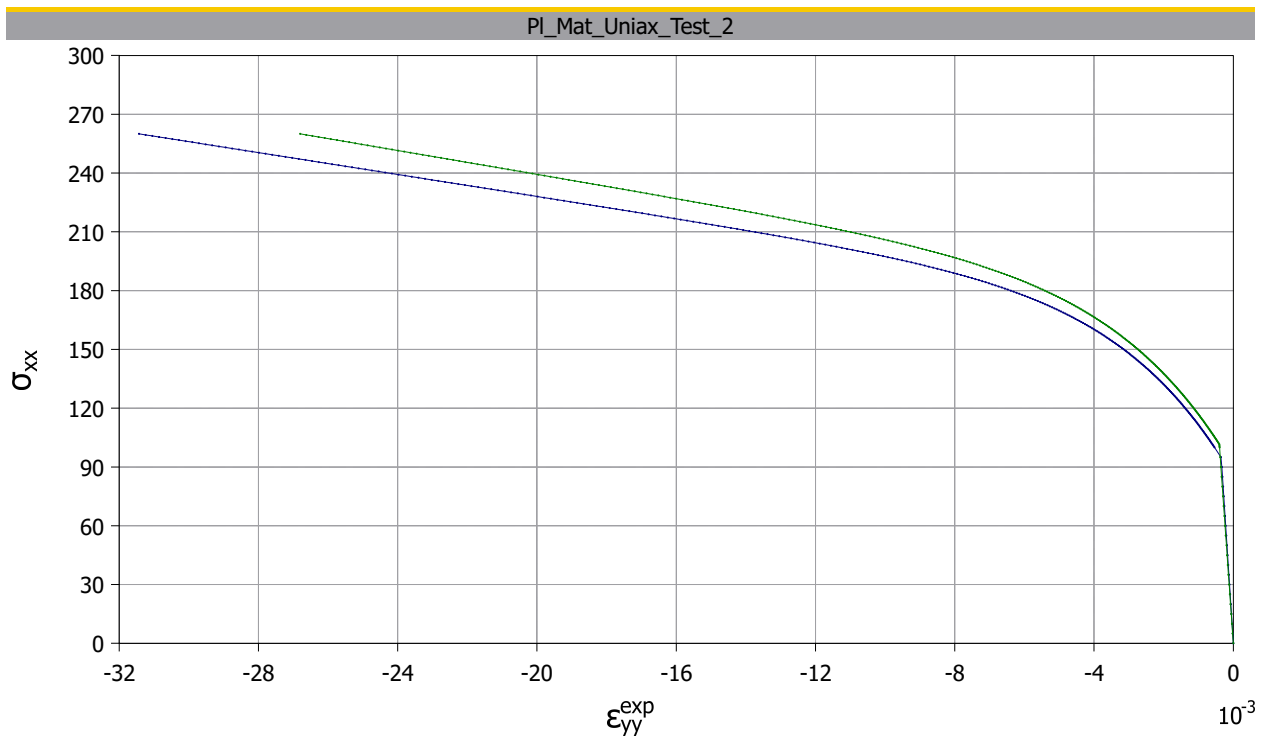
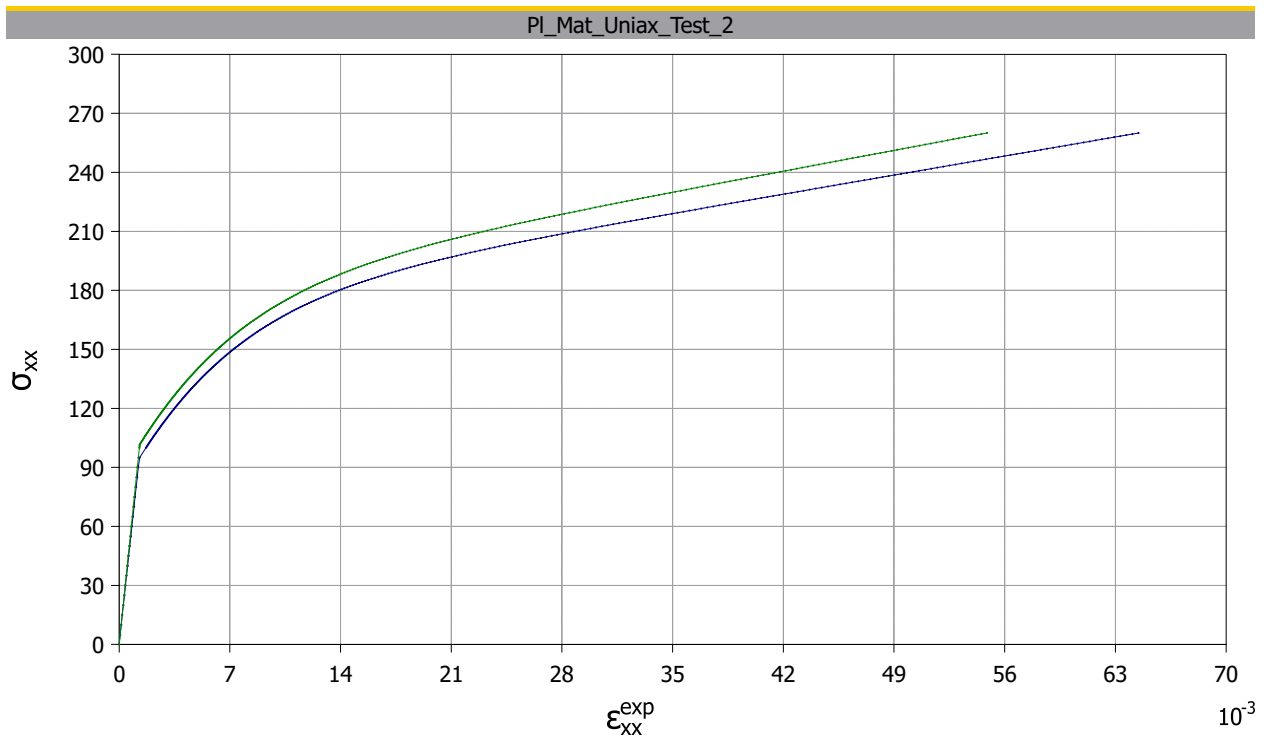


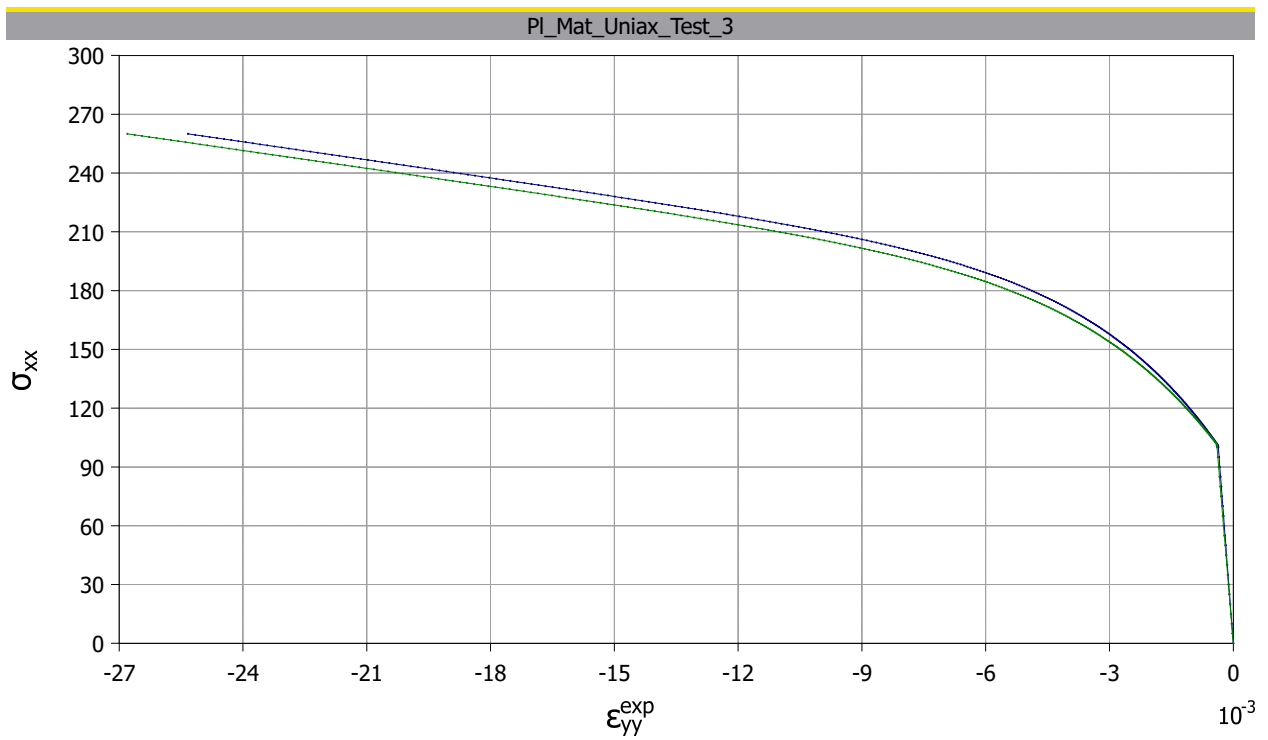
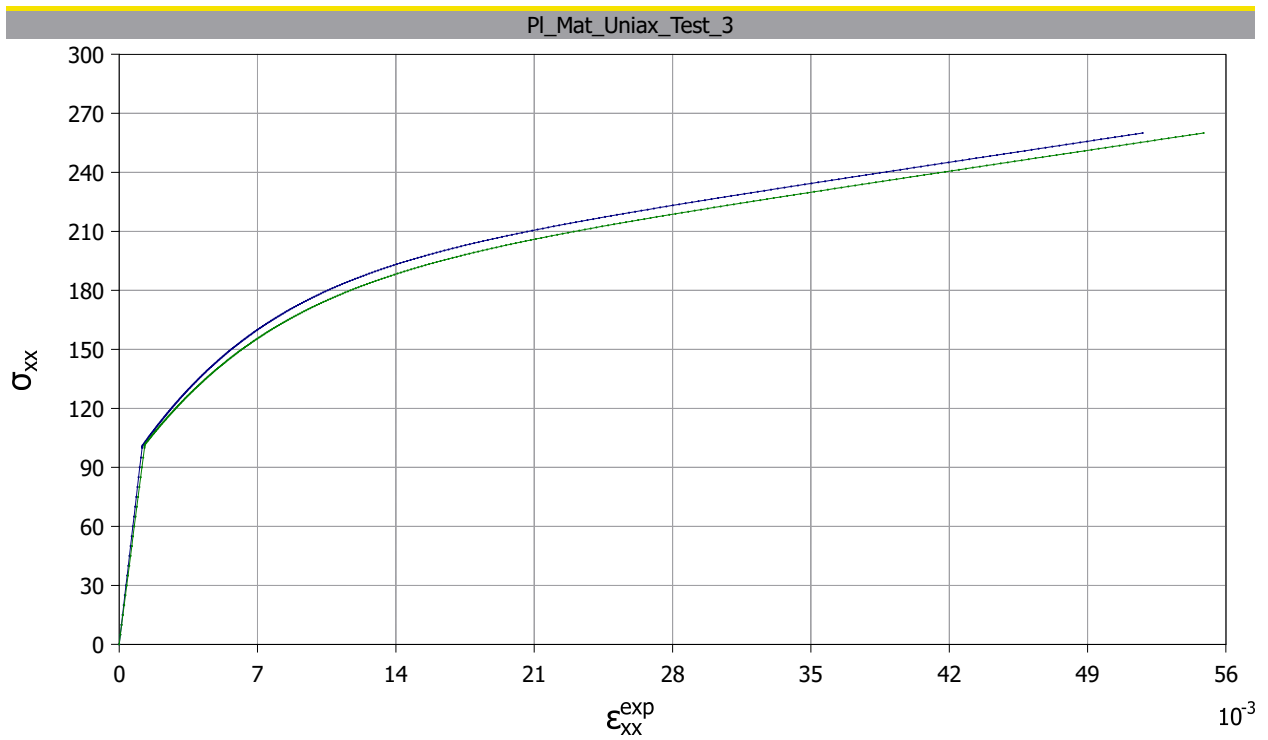
PI_Mat_Uniax_Test_1



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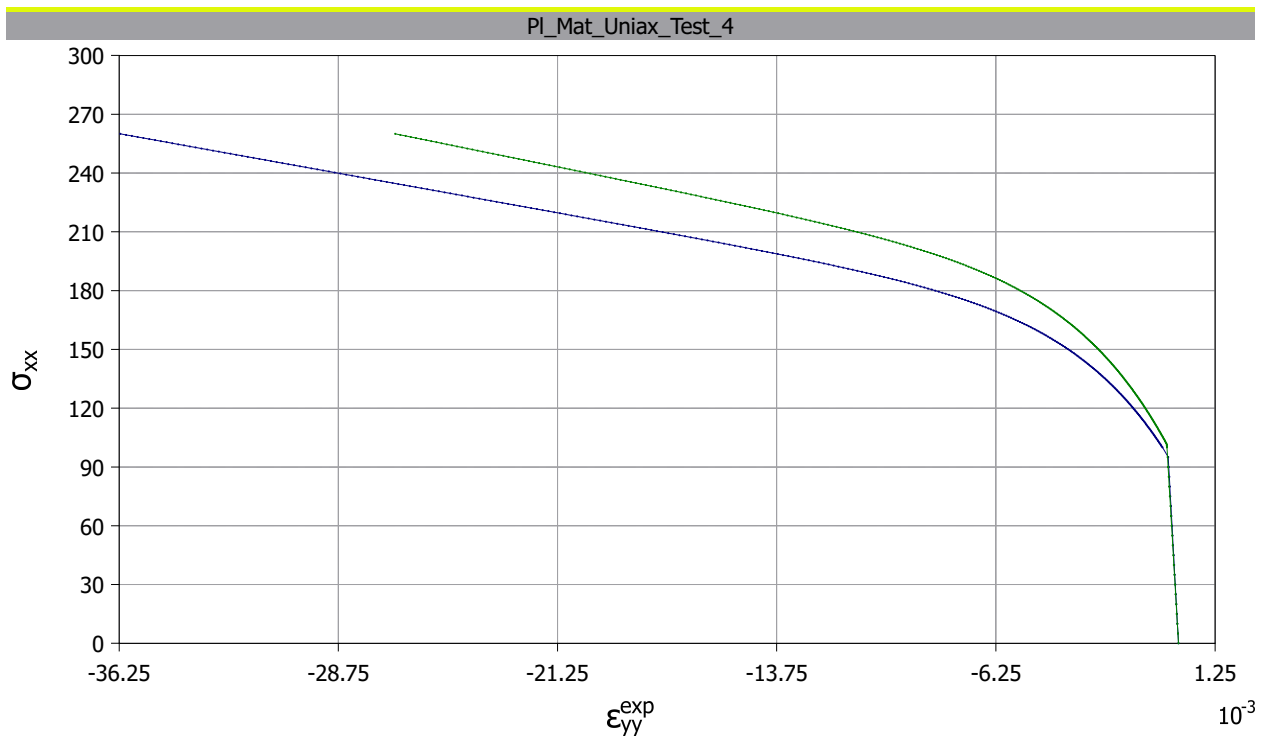
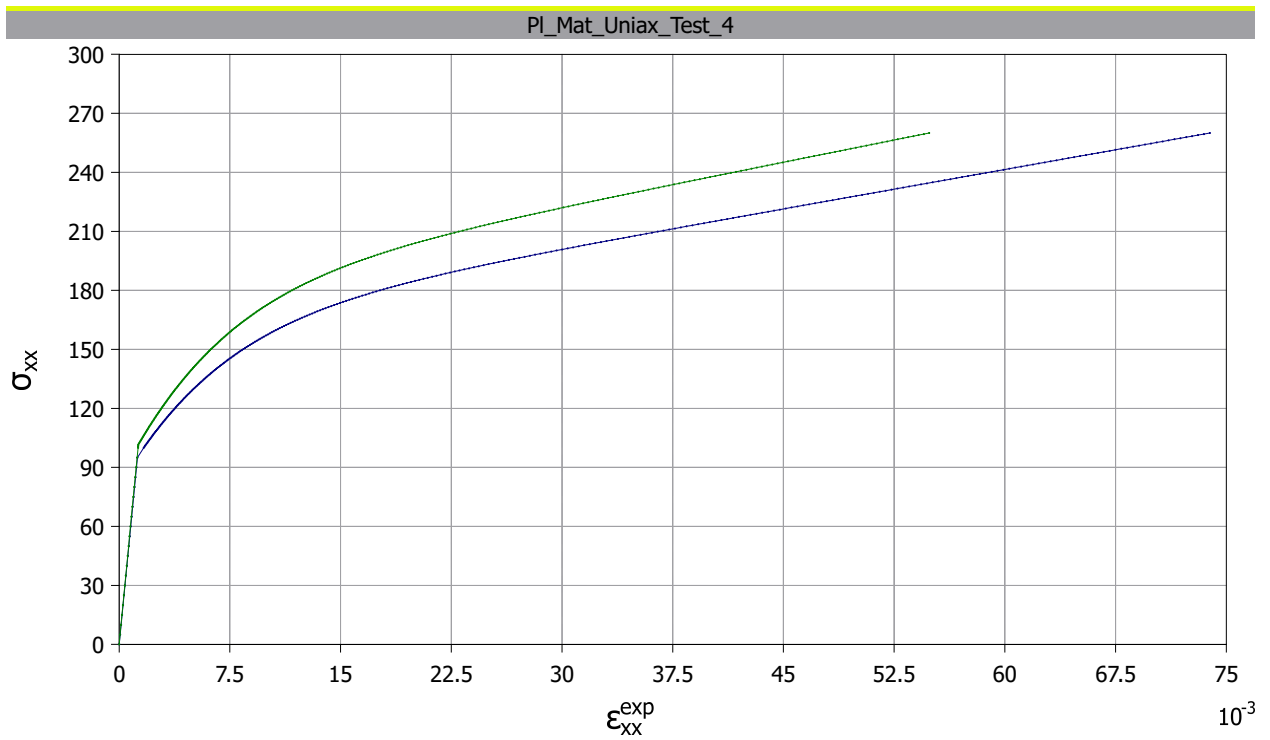
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